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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,638	09/15/2003	Jiro Hiraiwa	242742US3	8007
22850 7590 01/24/2008 OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, P.C. 1940 DUKE STREET ALEXANDRIA, VA 22314				
			EXAMINER ZHENG, LOIS L	
			ART UNIT 1793	PAPER NUMBER
			NOTIFICATION DATE 01/24/2008	DELIVERY MODE ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary	Application No. 10/661,638	Applicant(s) HIRAIWA ET AL.	
	Examiner Lois Zheng	Art Unit 1793	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 31 October 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-12 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Continued Examination Under 37 CFR 1.114

1. A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 31 October 2007 has been entered.

Status of Claims

2. Claims 1-2 are amended in view of applicant's claim amendments filed 31 October 2007. New claims 9-12 are added in view of applicant's claim amendments. Therefore, claims 1-12 are currently under examination.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

4. Claims 1-8 are rejected under 35 U.S.C. 103(a) as being unpatentable over WO 01/77412, whose corresponding US Patent is Tojo et al. US 6,518,105 B2(Tojo'105), in view of Marumo et al. US 4,790,859(Marumo), and further in view of JP2000-160390 (JP'390).

Tojo'105 teaches a fluorine gas generator for generating high purity fluorine gas by electrolysis of a mixed molten-salt comprising hydrogen fluoride(abstract). The fluorine gas generator of Tojo'105 comprises an electrolytic cell which is separated into an anode chamber and a cathode chamber(abstract, Fig. 1 numerals 5 and 7). Tojo'105 further teaches that the fluorine gas generator comprises absorption towers to downstream from the hydrogen and fluorine gases outlet to remove excess HF from the hydrogen gas and the fluorine gas(col. 6 lines 14-19). Fig. 1 of Tojo'105 appears to shown that the fluorine gas generator has box-shaped body.

However, the absorption towers of Tojo'105 do not explicitly read on the claimed first and second adsorption units. In addition, Tojo'105 does not explicitly teach the claimed at least three compartments for housing the electrolyzer and the adsorption units or the claimed second and third compartments directly adjacent to the first compartment.

Marumo teaches an apparatus for separating gaseous mixtures containing a first and a second gas having different chemical compositions(abstract). The gas separation apparatus of Marumo teaches using two adsorption towers to provide an efficient separation of a gas mixture(col. 2 lines 41-42, col. 11 lines 53-55). Marumo further teaches that the first adsorption tower is being used to separate the gas mixture while the adsorbent in the second adsorption tower is being regenerated. Later on, the process is switch where the second adsorption tower is used to separate the gas mixture while the adsorbent in the first adsorption tower is being regenerated(col. 12 lines 6-63).

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the gas mixture separation apparatus of Marumo with the dual adsorption tower setup into the fluorine gas generator of Tojo'105 to remove the HF from the hydrogen gas and the fluorine gas in order to achieve efficient separation of the gas mixture as taught by Marumo and to minimize the adsorption tower down time by using one adsorption tower for gas separation while allowing the adsorbent regeneration to take place in the other adsorption tower as taught by Marumo.

JP'390 teaches separating the control system and the electroplating cell in separate rooms and the oxygen and hydrogen gases are also discharged in these separate rooms to avoid potential hazardous or unsafe conditions due to cross-contamination(paragraph [0045, 0057]). In addition, JP'390 does not require that the separate rooms for housing the control system and the electroplating cell to be located away from each other. Therefore, the examiner considers two rooms located right next to each other with a shared wall within the scope of JP'390's invention.

Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated the multi-room housing of JP'390 into the apparatus of Tojo'105 in view of Marumo to separately house the electrolyzer, the equipments used to process the hydrogen gas product including the first adsorption unit and the equipments used to process the fluorine gas product including the second adsorption unit in order to avoid cross contamination as taught by JP'390 (abstract, paragraph [0017]).

In addition, one of ordinary skill in the art would have also found it obvious to put the hydrogen and fluorine gas product processing equipments, including the first and

second adsorption units, in separate rooms on each side of and adjacent to the room for housing the electrolyzer as taught by Tojo'105 in view of Marumo and JP'380, since both sets of gas product processing equipments are directly downstream from the anode and cathode chambers and such housing arrangement would minimize the piping required to transport the gas products to respective adsorption units.

Regarding claims 1-2, 9 and 11, the fluorine gas generator of Tojo'105 in view of Marumo and JP'390 meets the limitations of the instant claims.

Regarding claim 3, Tojo'105 further teaches an exhaust opening(Fig. 1 numeral 19) to provide controlled atmosphere for the interior of the fluorine gas generator(col. 8 lines 16-18). Therefore, it would have been obvious to one of ordinary skill in the art to have incorporated an exhaust opening(i.e. suction opening) to each of the three compartments of the fluorine gas generator in order to provide a controlled interior atmosphere in each of the electrolyzer and the hydrogen and fluorine gas post-treatment processing sections.

Regarding claim 4, Tojo'105 further teaches a buffer tank(Fig. 1 numeral 44) and a pressurizer(Fig. 1 numeral 42). Even though the buffer tank(i.e. reservoir means) and the pressurizer of Tojo'105 are located outside of the box-shaped housing instead of within the second compartment as claimed and the pressurizer of Tojo'105 locates upstream of the buffer tank instead of downstream from the buffer tank as claimed, one of ordinary skill in the art would have found the claimed reservoir and pressurizer locations obvious since it is well settled that rearrangement of parts is an obvious matter of design choice. In re Kuhle, 526 F.2d 553, 188 USPQ 7 (CCPA 1975). In addition,

the buffer tank and the pressurizer of Tojo'105 differs from the instant invention only in their locations, which is unpatentable because shifting the locations of the buffer tank and the pressurizer of Tojo'105 would not have modified the operation of the buffer tank and the pressurizer. In re Japikse, 181 F.2d 1019, 86 USPQ 70 (CCPA 1950). See MPEP 2144.04. Furthermore, it would have been obvious to one of ordinary skill in the art to have incorporated the buffer tank and the pressurizer of Tojo'105 in view of Marumo and JP'390 inside the same compartment for post-treatment of fluorine gas discharge(i.e. second compartment) in order to protect the buffer tank and the pressurizer from potentially hazardous environment and conditions.

Regarding claim 5, Tojo'105 teaches that a heater is used to provide proper heating of the electrolytic cell and the heater may take any form(col. 6 lines 53-67). Even though Tojo'105 in view of Marumo and JP'390 do not explicitly teach that the heater is a water heating device as claimed, one of ordinary skill in the art would have found it obvious to have used a water heating device in the heater of Tojo'105 in view of Marumo and JP'390 since a water heating device is a well known low cost heating device.

Regarding claim 6, even though Tojo'105 in view of Marumo and JP'390 do not explicitly teach that the electrolyzer is mounted on a transporting member, one of ordinary skill in the art would have found it obvious to have mounted the electrolytic cell of Tojo'105 in view of Marumo and JP'390 on a transporting member capable of moving the electrolytic cell in and out of the fluorine gas generator in order to allow easy access

to the electrolytic cell for routine maintenance such as cleaning and replacement of parts.

Regarding claims 7-8, the adsorption unit of Tojo'105 in view of Marumo and JP'390 comprises two adsorption columns and can be operated alone as claimed. In addition, even though Tojo'105 in view of Marumo and JP'390 do not explicitly teach that the adsorption columns are mounted on transporting members as claimed, one of ordinary skill in the art would have found it obvious to have mounted the adsorption columns of Tojo'105 in view of Marumo on transporting members capable of moving the adsorption columns in and out of the first and second compartments in order to allow easy access to the adsorption columns for routine maintenance such as cleaning and replacement of parts.

Regarding claims 10 and 12, the multi-room housing as taught by Tojo'105 in view of Marumo and JP'390 reads on the claimed box-shaped body formed as a unit based on the broadest reasonable interpretation.

Response to Arguments

5. Applicant's arguments filed 31 October 2007 have been considered but are not persuasive.

Applicant argues that the Final Office Action does not disclose any prior art in which a fluorine gas generator having a box-shaped body divided into three different compartments as claimed. In addition, JP'390 only teaches two separate rooms, not the claimed three separate compartments wherein the second and third compartments are directed adjacent to the first compartment.

The examiner respectfully disagrees. JP'390 teaches separately housing an electrochemical device such as an electroplating unit and a control system for the electrochemical device to avoid contamination to one major component of the apparatus, such as the electroplating unit, during maintenance operations of another major component of the apparatus, such as the control system. The fluorine gas generator of Tojo'105 in view of Marumo would have also been concerned with the same potential cross-contamination issues during maintenance work on the electrolyzer, the first and/or the second adsorption units. Therefore, one of ordinary skill in the art would have found it obvious to provide separate housing for the major components of the fluorine generator of Tojo'105 in view of Marumo in order to eliminate the potential contamination of one major component, for example the first adsorption unit, while other one or two major components, for example, the electrolyzer and the second adsorption unit, are undergone maintenance as suggested by JP'390.

In addition, the first and second adsorption towers as taught by Tojo'105 in view of Marumo are downstream from the electrolyzer and are located on each side of the electrolyzer. Therefore, one of ordinary skill in the art, in light of the teachings of JP'390, would have put the adsorption units in rooms adjacent to and on each side of the electrolyzer room in order to minimize the hydrogen and fluorine gas product piping from the electrolyzer to the adsorption units.

Furthermore, the concept of separately housing the major component of an electrolysis unit to avoid cross-contamination is shown in JP'390. The examiner believes that it would have been within the skills of one of ordinary skill in the art to

derive from the teachings of JP'390 and implement additional housing to isolate other equipments of an electrolyzer unit to avoid cross-contamination. The exact positioning of placement of the housing compartments are merely an obvious matter of design choice absent any persuasive evidence that any particular arrangement is significant. See MPEP 2144.04.

Furthermore, the claimed shape of the housing body(i.e. box-shaped) is also a matter of choice which a person of ordinary skill in the art would have found obvious absent persuasive evidence that the particular configuration of the claimed container was significant. See MPEP 2144.04.

Therefore, the examiner maintains that the combination of Tojo'105 in view of Marumo and JP'390 is proper.

Applicant further argues that none of Tojo'105, Marumo and JP'390 addresses the benefits of the claimed features.

The examiner does not find applicant's argument persuasive. It is well settled that the reason or motivation to modify the reference may often suggest what the inventor has done, but for a different purpose or to solve a different problem. It is not necessary that the prior art suggest the combination to achieve the same advantage or result discovered by applicant. In re Linter, 458 F.2d 1013, 173 USPQ 560 (CCPA 1972). See MPEP 2144. Since JP'390 already provides a proper motivation for using separate housing as set forth above, the combination of Tojo'105, Marumo and JP'390 is proper.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lois Zheng whose telephone number is (571) 272-1248. The examiner can normally be reached on 8:30am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on (571) 272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

LLZ


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